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Pesticide Fact Sheet Number 162
Harmony 75 DF

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16. Abstract (Limit: 200 words)

This document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. A Fact Sheet is issued after one of the the following actions has occurred.

1. Issuance or reissuance of a registration standard,
2. Issuance of each special review document,
3. Registration of a significantly changed use pattern,
4. Registration of a new chemical, or
5. An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

17. Document Analysis a. Descriptors

Pesticides, regulations, Chemical Information Fact Sheet, Use Patterns, science findings.

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

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United States
Environmental Protection
Agency

Office of Pesticides and Toxic Substances
Office of Pesticide Programs (TS-766C)
Washington, DC 20460

540/FS-88-071

EPA

Pesticide Fact Sheet

Name of Chemical: Harmony 75 DF
Reason for Issuance: New Chemical Registration
Date Issued: APR 25 1988
Fact Sheet Number: 162

1. Description of Chemical

Generic Name: Methyl 3-[[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl) amino] carbonyl]amino]sulfonyl]-2-thiophencarboxylate

Common Name:

Trade Name: Harmony 75 DF

EPA Shaughnessy Code: 128845

Chemical Abstracts Service (CAS) Number: 79277-27-3

Year of Registration: 1988

Pesticide Type: Herbicide

Chemical Family: Sulfonylurea

U.S. Producer: E.I. DuPont DeNemours & Company

2. Use Pattern and Formulations

Application Sites: Terrestrial Food Crops

Major Crops Treated: Small grains (wheat and barley)

Types and Method of Application: Foliar, applied broadcast by ground equipment or broadcast by aircraft. It is applied postemergence in relation to the crop. A selective postemergence herbicide for control of certain annual and perennial weeds.

Application Rates: 0.33 - 0.67 ounces active ingredient/A (9.4-19g).

Types of Formulation: 75% water dispersible granule

Usual Carrier: Water

3. Science Findings:

Summary Science Statement: All data are acceptable to the Agency. DPX-M 6316 has low acute toxicity (Category III) for acute dermal, primary eye irritation, and is less toxic (Category IV) for all other forms of acute toxicity. It was not oncogenic to rats or mice, not teratogenic to rabbit, and not mutagenic. It is practically nontoxic to birds, fish, aquatic invertebates, and honeybees. The pesticide and its degradates will leach in soil and have the potential to contaminate groundwater at very low levels. The nature of the residues in plants and animals are adequately understood and adequate methodology is available for enforcement of tolerances in wheat and barley grain and straw.

Chemical Characteristics:

Physical State: Crystalline solid

Color: White

Odor: None

Melting Point: 176-178°C

Density: 1.49g/cc

Solubility (25°C):

Water (pH 4.0)	24 milligrams 1 liter /1)
(pH 5.0)	260 mg/l
(pH 6.0)	2400 mg/l
Acetone	11.9 mg/l
Acetonitrile	7.3 mg/l
Ethanol	0.9 mg/l
Methanol	2.6 mg/l
Hexane	<0.1 mg/l
Ethyl Acetate	2.6 mg/l
Methylene Chloride	27.5 mg/l
Xylenes	0.2 mg/l

Vapor Pressure: 2.7×10^{-6} mm Hg/25°C

Dissociation Constant: 4.0 (pKa of the acid)

Octanol/Water Partition Coefficient: 0.027

pH: 4.0 (slurry in water)

Stability: Stable to metals and light. Decomposes on melting. In solution the compound is very stable to methylene chloride and ethyl acetate, moderately stable in methanol, and relatively unstable in acetone and acetonitrile. The photolytic half-life in an aqueous solution is expected to be 1 to 5 days.

Toxicological Characteristics:

Acute Toxicology (Technical):

Acute Oral Toxicity greater than (>) 5000 milligrams/kilogram (mg/kg)

(Rat) Toxicity Category IV

Acute Inhalation Toxicity > 7.9 mg/l/4 hour

(Rat) Toxicity Category III

Acute Dermal Toxicity > 2000 mg/kg

(Rabbit) Toxicity Category III

Acute Toxicology (75% end-use formulation):

Acute Oral Toxicity > 5000 mg/kg

(rat) Toxicity Category IV

Acute Dermal Toxicity > 2000 mg/kg

(rabbit) Toxicity Category III

Primary eye Irritation - Moderate Eye Irritant

(rabbit) Toxicity Category III

Skin Sensitization - Not a sensitzer

(guinea pig)

Major Routes of Exposure: The major routes of exposure are through dermal and eye contact.

Chronic Toxicology:

2-Year Feeding/Oncogenicity Study (Rats)
Systemic no-observable effect level (NOEL)= 1.25 mg/kg/day
Systemic lowest effect level (LEL)= 25 mg/kg/day
No-oncogenic effect noted at 125 mg/kg [highest dose tested (HD>)

18-Month Oncogenicity Study (Mice)

Systemic NOEL= 3.75 mg/kg/day
Systemic LEL= 112.5 mg/kg/day
No oncogenic effects noted at 1125 mg/kg/day (HDT)

1-Year Feeding (Dog)

NOEL = 18.75 mg/kg/day
LEL = 18.75 mg/kg/day

Teratology (Rat)

Maternal NOEL greater than (>) 725 mg/kg/day/(HDT)
Fetotoxic NOEL = 159 mg/kg/day
Fetotoxic LEL = 725 mg/kg/day
Teratogenic NOEL = 159 mg/kg/day

Teratology (Rabbit)

Maternal NOEL = 158 mg/kg/day
Maternal LEL = 511 mg/kg/day
Teratogenic NOEL > 511 mg/kg/day(HDT)

2-Generation Reproduction (Rat)

Systemic and Reproduction NOEL > 125 mg/kg/day(HDT)
No reproductive effects seen at 125 mg/kg/day (HDT)

Mutagenicity - Reverse Mutation Asssay in Salmonella - not mutagenic with and without S-9.

Mutagenicity - Gene-Mutation-No increase in mutation frequency was seen at the highest dose tested of 7 nm the limit of solubility.

Mutagenicity - DNA synthesis/rat hepatocytes in nitro-material did not induce signficant increase in unscheduled DNA synthesis (UDS) in primary cultures.

Physiological and Biochemical Behavior Characteristics:

Foliar Absorption: Rapid

Translocation: Translocated within the plant

Mechanism of Pesticidal Action: Selectively inhibit acetolactate synthase.

Metabolism and Persistence In Plants: In plants DPX-M6316 degrades into thiophene and triazine containing entities which appear to be stable and behave as sugars.

Bioacc ulation: Not expected to bioaccumulate in fish.

Environmental Characteristics:

Absorption and Leaching: In unaged column leaching studies, DPX-M6316 showed a high propensity to move in all soil types tested (sandy loam, loamy sand, silt and silt loam). In aged column leaching studies, residues were very mobile in silt loam soil with parent compound and DPX-M6316 acid represnting a major fraction of the leachate. The triazine amine degrades and has a high potential to leach. Because of its potential to leach, the triazine amine has a potential to contaminate groundwater, but because of the low application rate rapid degradation and single application/season, the levels would be very low.

Microbial breakdown: Degrades rapidly in the field via microbial degradation. Aerobic soil metabolism study indicates the DPX-M6316 is degraded to CO_2 via several metabolites in 2-6 days. The triazine amine peaked at 15% of the total residues. The anaerobic metabolism study indicated a similar pattern but at a slower rate.

Loss from Photodecomposition and/or volatilization : Does not volatilize. Degrades rapidly in the field via photolysis.

Exposure of Humans and Nontarget Organisms to Chemical or Degradate: Because of the low toxicity from oral, dermal and inhalation (toxicity category IV, III, and III) and since the chemical is not a skin sensitizer, the risk to humans from exposure should be minimal. Nontarget organisms are not likely to be adversely affected by use of DPX-M6316 because of its low toxicity to birds, fish, and invertebrates.

Exposure During Reentry: Because of low acute toxicity and cultural practices for wheat and barley (little or no reason for field workers to enter field after application) reentry data or labeling are not required.

Ecological Characterists:

Avian Oral Acute Toxicity with Mallard Ducks: > 2510 mg/kg

Avian Dietary Toxicity with Bobwhite quail:> 5620 mg/kg

Mallard Ducks: > 5620 mg/kg

Acute Aquatic Toxicity with Rainbow Trout: > 100 mg/kg

Bluegill Sunfish> 100 mg/kg

Acute Toxicity to Invertebrates: > 1000 mg/kg

Acute Toxicity to Honey Bee:> 12.5 mg/kg

Available data indicate that DPX-M6316 is practically non-toxic to birds, fish, aquatic invertebrates, and honey bees.

Endangered Species: The available data indicate that the proposed use of DPX-M6316 is unlikely to pose a hazard to endangered aquatic or avian species. There may be some hazard to endangered plants.

Tolerance reassessment: Tolerances are established for residues of the herbicide DPX-M6316 (methyl 3-[[[[4-methoxy-6-methyl-1,3,5 Triazin-2-yl) amino]carbonyl] amino] sulfonyl]-2-thiophencarboxylate) in or on the following raw agricultural commodities (40 CFR 180.439).

Commodities	Parts Per Million
barley, grain	0.05
barley, straw	0.1
wheat, grain	0.05
wheat, straw	0.1

The acceptable daily intake (ADI) based on the 2-year rat feeding study (NOEL of 1.25 mg/kg/day) and using a safety factor of 100 is calculated to 0.013 mg/kg/day. The theoretical maximum residue contribution (TMRC) from these tolerances is calculated to be 0.000073 mg/kg body weight/day, which occupies approximately 0.6% of the ADI. There are no other published tolerances for this chemical.

Reported Pesticide Incidents: There are no reported pesticide incidents for the chemical.

4. Summary of Regulatory Position and Rationale

The Agency has decided that the data submitted in support of the registration request is acceptable and fulfills the guidelines requirements. Therefore, the Agency has accepted the use of DPX-M6316 for control of weeds in wheat and barley.

The Agency has determined that DPX-M6316 and its degradates have a potential to leach and therefore contaminate groundwater. Therefore the Agency is requiring a small scale groundwater monitoring study, methodology to determine DPX-M6316 and its degradates in groundwater, and an anaerobic soil metabolism study using radiolabeled material with labeling on the triazine moiety.

5. Summary of Data Gaps

Small scale prospective groundwater monitoring study.
Methodology to determine DPX-M6316 and its degradates in water.
Anaerobic soil metabolism study with radiolabelled triazine moiety.

6. Contact Person at EPA:

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Disclaimer: The information in this Pesticide Fact Sheet is a summary only and may not be used to fulfill data requirements for pesticide registration and reregistration.